



ISABELLENHÜTTE

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# Isabellenhütte introduces a new range of 1-to-6 mOhm precision resistors

## **New FMx shunt family: Small and low-ohmic**

*Isabellenhütte has developed a new range of precision resistors in standard sizes with resistances ranging from 1 to 6 mOhm for applications which require small and low-ohmic shunts. In terms of their construction, the components are also less complex than the current ISA-PLAN® resistance families. And yet, they offer the same performance quality: very good long-term stability, a low temperature coefficient, and low thermoelectric voltages.*

With the FMx shunt family, Isabellenhütte has now plugged a gap in the standard size range for precision resistances. It has not been possible with the previous product ranges to realize the usual S (2512), P (2010) and K (1206) standard sizes in the resistance range from 5 to 1 mOhm. The impetus for this new development was provided by increasing demand for these resistances as well from a wide range of industries, including the automotive sector (for in-car chargers and assistance systems) and industry (for BLDC drive units), but also from the consumer market (e.g. for white goods).

## **The development approach**

The large cross-sectional areas required for low-ohmic components have been achieved by a change in construction, and the production process has also been significantly simplified. A further milestone for the FMx shunts has been the development of the NOVENTIN® resistance alloy to make it possible to realize these low-ohmic values in defined sizes. Until now, the ISA-PLAN® resistances (SMx, VMx and CMx) have followed a sandwich construction, consisting of a substrate – usually copper – an adhesive and a resistance film made out of the ZERANIN® and MANGANIN® resistance alloys developed in-house by Isabellenhütte. The FM in the title of the new range stands for “Full Metal”, i.e. the components are fashioned in the corresponding

thickness out of a full metal plate made of the resistance material in question and directly soldered onto the underside. This variant is very low-ohmic due to the large cross-sectional areas. 1 mOhm is realized with the ZERANIN® alloy, 2 mOhm with MANGANIN®, and, for the first time, NOVENTIN® is being used in ISA-PLAN® products for the resistance range from 3 to 6 mOhm. The new design has given rise to a particularly robust construction which also makes it possible to leave out some work stages and reduce costs. An important point for the automotive industry is this: The components form a soldering point meniscus to guarantee the possibility of automated inspection of the soldering points.

#### **Less complex with the same quality parameters**

Despite the reduction in complexity, the FMx range still offers the same high performance quality as the existing high-ohmic product family. This is ensured by the high-class, massive resistance material, the very good long-term stability, a low temperature coefficient and low thermoelectric voltages. These aspects give rise to good measurement resistance.

#### **Start of production in the last quarter of 2020**

Beta samples of the FMx range are currently in production. Qualification in accordance with the AEC-Q200 standard in the automotive sector is planned for the second quarter of 2020, with the start of production scheduled for the fourth quarter of the same year.

*3,322 stops*

#### **Image material:**

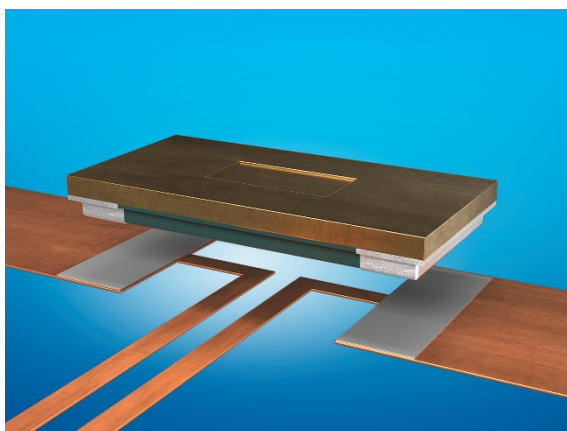


Image caption: An FMx shunt under construction: The resistance material, e.g. NOVENTIN®, is made of a robust full metal plate which is directly soldered with its underside. Very low-ohmic resistances are achievable thanks to the large cross-sectional areas.

Image: ©Isabellenhütte Heusler GmbH & Co. KG



**About Isabellenhütte Heusler**

The measurement systems from Isabellenhütte Heusler GmbH & Co. KG are leading technology in the field of shunt-based current measurement systems.

Isabellenhütte Heusler GmbH & Co. KG has been owned by the Heusler family since 1827. Around 950 employees work at the company headquarters and production location in Dillenburg (Hesse).

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